poisoning through naloxone prescription programs. Understanding the economic burden of opioid poisoning can help inform these efforts and highlight the need for further interventions to attenuate current trends. The main objectives of this study were to quantify the economic burden of opioid poisoning, estimate the cost per poisoning event, and to quantify costs of opioid poisoning for specific prescription opioids in the United States. **METHODS:** A cost-of-illness approach was used. Direct costs related to hospitalization and ED visits and estimates for mortality and prevalence were obtained from nationally representative databases. Other sources of direct costs were obtained from the literature. Indirect costs included absenteeism and premature mortality costs, and were measured using the human capital method. One-way and probabilistic sensitivity analyses were used to test assumptions. **RESULTS:** Opioid poisoning resulted in an economic burden of approximately $20.4 billion in 2009. Eighty-nine percent was attributed to productivity losses, of which 98% was from premature mortality. Approximately $2.2 billion were attributed to direct medical costs. Costs for heroin and prescription opioid poisoning were estimated to be $4.6 billion and $15.9 billion, respectively. The cost per poisoning event was estimated to be $37,274 for all opioids. The cost per poisoning event for heroin and prescription opioids was $33,793 and $38,541, respectively. The three prescription opioids with the greatest poisoning costs were hydrocodone, oxycodone, and methadone. **CONCLUSIONS:** Opioid poisoning results in a significant economic burden to society. Costs related to mortality account for the majority of the costs. Interventions that prevent or reverse opioid poisoning can have significant impacts on cost, especially where death is prevented.

PMH28

PATTERNS OF RELAPSE AND ASSOCIATED COST BURDEN IN SCHIZOPHRENIA PATIENTS RECEIVING ATYPICAL ANTIPSYCHOTICS

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OBJECTIVES: To identify relapse in schizophrenia and the main cost drivers of relapse using a claims-based algorithm. **METHODS:** Multistate Medicaid data (1997–2010) were used to identify adults with schizophrenia receiving atypical antipsychotics (AAPs). The first schizophrenia diagnosis following AAP initiation was defined as the index date. Baseline weekly cost was assessed during the 12 months before the index date, and weekly costs were calculated for ≥2 years post index. An algorithm was developed to identify relapse episodes based on weeks associated with high cost increase from baseline and high absolute weekly cost. Resource use and costs of relapsers during baseline and relapse episodes were compared using incidence rate ratios (IRRs) and bootstrap methods. No adjustment was made for multiplicity. **RESULTS:** 9,793 relapsers were identified, with a mean of 9 relapse episodes per patient. Duration of relapse episodes decreased over time, with a mean(median) duration of 34(4) weeks for the first and 8(1) weeks for remaining episodes. Compared with baseline, resource utilization during relapse episodes was significantly greater in pharmacy, outpatient, and institutional visits (hospitalizations and emergency room visits), with IRRs ranging from 1.9–2.4 (all p<.0001). Correspondingly, relapse was associated with a mean (95% CI) cost increase of $2459($2384–$2539)—nearly 6 times larger than mean (median) weekly baseline maintenance cost of $425($148). Institutional visits characterized most (53%) of the relapse episode incremental costs, with hospitalizations (excluding mental institute inpatient admissions) representing 36%. **CONCLUSIONS:** Relapses in schizophrenia patients were associated with cost on average 6 times higher than the median maintenance costs. Institutional visits characterized most of the cost increase.

PMH29

CLINICAL AND ECONOMIC BURDEN OF U.S. VETERAN SCHIZOPHRENIA PATIENTS: A REAL-WORLD EVALUATION

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OBJECTIVES: This study aimed to assess the clinical and economic burden of schizophrenia in the U.S. veteran population. **METHODS:** Patients diagnosed with schizophrenia were included in a retrospective study conducted using the Veterans Health Administration (VHA) Medical SAS Datasets. The study period was from January 1, 2006 to May 31, 2012. Health care resource utilization and costs were assessed in the 12-month follow-up period. Descriptive statistics were calculated as means ± standard deviation (SD) and percentages to measure treatment, cost, and utilization distribution in the sample. **RESULTS:** For VHA patients diagnosed with schizophrenia (n=59,691), the most common comorbidities were counseling not otherwise specified (21.25%), other specified counseling (19.42%) and unspecified essential hypertension (18.90%). 52.56% of patients were prescribed oral anti-psychotic therapy (OAT) and 2.43% were prescribed long-acting anti-psychotic therapy (LAT). The most commonly prescribed medications after diagnosis were risperidone (20.66%), simvastatin (17.58%), quetiapine (17.21%), omeprazole (15.16%), lisinopril (14.79%) and aspirin (13.58%). Percentages of inpatient (38.13%), emergency room (ER) (35.19%), physician office (98.86%), and outpatient visits (99.08%) were also calculated. Patient expenditures were found to be $18,162 (SD= $65,948) for inpatient, $517 (SD=$1,333) for ER, $10,366 (SD=$14,243) for physician office and $11,074 (SD=$14,923) for outpatient visits. **CONCLUSIONS:** Results suggest that risperidone was the most frequently prescribed medication after a diagnosis of schizophrenia. However, more research is needed to better understand adverse events and side effects of risperidone.

PMH30

TREATMENT, HEALTH CARE COSTS AND UTILIZATIONS OF VETERANS WITH MENTAL DISORDERS N THE UNITED STATES

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OBJECTIVES: To examine the treatment, clinical and economic burden of mental disorders in the U.S. veteran population. **METHODS:** Patients diagnosed with mental disorders were studied in a retrospective study (1/1/2006-5/31/2012) using the Veterans Health Administration Medical SAS Datasets. The mental disorders studied included mood disorder, attention deficit hyperactivity disorder, panic disorder, post-traumatic stress disorder, obsessive-compulsive disorder, generalized anxiety disorder, personality disorder, depression, anxiety, suicide, and intentional injuries. Using the initial mental disorder diagnosis date as the index date, patients were required to have at least 1 year of continuous health plan benefits pre- and post-index date. Health care resource utilization and costs were assessed for the 12-month follow-up period. Descriptive statistics were calculated as means ± standard deviation (SD) and percentages to measure treatment, cost, and utilization distribution in the sample. **RESULTS:** Among patients identified with mental disorders (n=1,644,214), 48.60% were diagnosed with depression, 46.56% with mood disorders, and 21.57% with intentional injuries. The most common comorbidities were unspecified essential hypertension (21.07%), counseling not otherwise specified (18.35%), and other specified counseling (15.92%). 38.88% of patients were prescribed anti-depressant treatment, and 15.99% anti-cholinergic treatment. The most commonly prescribed medications were simvastatin (20.09%), lisinopril (15.36%), omeprazole (14.49%), citalopram hydrobromide (14.26%), and hydrochlorothiazide (8.47%). Percentages of inpatient (18.90%), emergency room (ER) (27.50%), physician office (99.51%), and outpatient visits (99.77%) were also calculated. Patient expenditures were found to be $6,893 (SD= $36,727) for inpatient, $312 (SD=$1,085) for ER, $7,249 (SD= $11,523) for physician office and $7,820 (SD=$12,262) for outpatient visits. **CONCLUSIONS:** Depression and mood disorders were the most prevalent mental disorders. Anti-depressant drugs were the most commonly prescribed medication type during the 60 days after mental disorder diagnosis. Mental disorders were associated with high health care utilizations, and created a significant cost burden on the health care system.

PMH31

A REAL-WORLD EVALUATION OF THE CLINICAL AND ECONOMIC BURDEN OF VETERAN PATIENTS WITH POST-TRAUMATIC STRESS DISORDER IN THE UNITED STATES

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OBJECTIVES: Post-traumatic stress disorder (PTSD) is a type of anxiety disorder that occurs after experiencing a traumatic event, and can lead to severe impairment of a patient's daily life. The study aims to assess the clinical and economic burden of PTSD in the U.S. veteran population. **METHODS:** Patients diagnosed with PTSD (*International Classification of Diseases*, Ninth Revision, Clinical Modification [ICD-9-CM]: 309.81) were selected from the Veterans Health Administration (VHA) database (October 1, 2006-May 31, 2010). The first observed diagnosis date was defined as the index date. Continuous medical and pharmacy benefits were required 12-months pre- and post-index date. The top ten most common comorbidities were calculated for the 12-month baseline period. The top ten treatments were calculated for 60 days post-index date. Health care resource utilization (inpatient, outpatient, office, emergency room [ER] visits), and costs (inpatient, outpatient, ER, pharmacy total costs) were assessed for the 12-month follow-up period. Descriptive statistics were calculated as means ± standard deviation (SD) and percentages to measure treatment, cost, and utilization distribution in the sample. **RESULTS:** For VHA PTSD patients (n=488,770), the most common comorbidities were essential hypertension (19.07%) and depressive disorder (13.42%.%). 50.43% of patients were prescribed anti-depressant treatment, and 15.35% anti-cholinergics treatment. The most commonly prescribed medications were citalopram hydrobromide (17.94%), simvastatin (15.47%), omeprazole (12.26%), lisinopril (11.92%), and trazodone (11.30%). Percentages of inpatient (16.10%), ER (22.76%), physician office (99.86%), and outpatient visits (99.89%) were also calculated. Patient expenditures were found to be $5,240 (SD= $29,382) for inpatient, $264 (SD=$822) for ER, $8,437 (SD= $10,803) for physician office and $8,926 (SD=$11,443) for outpatient visits. **CONCLUSIONS:** Results suggest that hypertension and depressive disorder are the most common comorbidities during the baseline period. Anti-depressant prescriptions were most prevalent during the 2-month follow-up period. PTSD was associated with high inpatient and ER visit rates, translating into a high cost burden.

PMH32

TRENDS IN ATTENTION DEFICIT HYPERACTIVITY DISORDER MEDICATION USE AND EXPENDITURES IN THE UNITED STATES: AN ANALYSIS OF 2000-2010 MEDICAL EXPENDITURE PANEL DATA

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OBJECTIVES: To determine trends in Attention Deficit Hyperactivity Disorder (ADHD) medication use and expenditures in the US from 2000 to 2010. **METHODS:** This was a retrospective cross-sectional analysis of the household component of the Medical Expenditure Panel Survey (MEPS) data from 2000 to 2010 (using the full-year consolidated data files and prescribed medicines files) involving all ADHD patients (International Classification of Disease 9th revision [ICD-9] code 314) on any FDA approved ADHD medication. Outcome measures were ADHD medication utilization and cost (adjusted to 2010 dollars). Since

MEPS employs a complex, probabilistic survey design, standard error estimates were computed using the 'SURVEY' procedures of SAS. **RESULTS:** The percentage of the total US population on ADHD medications grew from 0.7% in 2000 to 1.4% in 2010 with an estimated average annual utilization growth rate of 13.1%. Aggregate spending on all ADHD medications increased from $684.9 million in 2000 to $3.6 billion in 2010 with an estimated average annual spending growth rate of 42.7%. Average spending on ADHD medication per user increased from $356.9 (SE=$23.0) in 2000 to $816.2 (SE=$55.5) in 2010. Stimulants accounted for over 70% of total yearly spending on all ADHD medications between 2000 and 2010. From 2002, long-acting stimulants accounted for the majority (>60%) of the total yearly spending on stimulant medications. Furthermore, across the years by demographic sub-groups, younger children (≤12 years), males, individuals on private health insurance, and low/middle income families had the highest ADHD utilization rates (>37%) and accounted for the highest proportion (>39%) of spending on all ADHD medications. **CONCLUSIONS:** A steady growth in ADHD medication use and expenditure was observed across 2000 to 2010 with the key growth drivers being younger children (≤12 years), males, individuals on private health insurance, and low/middle income families.

PMH33

HEALTH INSURANCE COST OF PARKINSON DISEASE IN HUNGARY: A COST OF ILLNESS STUDY

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OBJECTIVES: To calculate the annual health insurance treatment cost of Parkinson disease in Hungary. **METHODS:** The data derive from the financial database of the Hungarian National Health Insurance Fund Administration (NHIFA), the only health care financing agency in Hungary. We analyzed the health insurance treatment cost and the number of patients for the year 2010. The following cost categories were included into the study: out-patient care, in-patient care, CT-MRI, PET, home care, transportation, general practitioner, drugs and medical devices. **RESULTS:** The Hungarian National Health Insurance Fund Administration spent 5.349 billion Hungarian Forint (HUF) (EUR 19.16 million) for the treatment of Parkinson patients. The annual average expenditure per patient was HUF 45897 (EUR 164) while the average expenditure per one inhabitant was HUF 534 (EUR 1.9). Major cost drivers were pharmaceuticals (77.4% of total health insurance costs), general practitioners (9.6%) and out-patient care (7.1%). The number of Parkinson patients was 116 per 100000 populations. We found the highest patient number in pharmaceutical budget (116545 patients), out-patient care (74562 patients) and general practitioners (59993 patients). **CONCLUSIONS:** Parkinson disease represents a significant burden for the health insurance system. Pharmaceutical treatment is the major cost driver for Parkinson disease.

PMH34

INITIAL ASSESSMENT OF REAL-WORLD USAGE OF EXTENDED-RELEASE INJECTABLE PALIPERIDONE PALMITATE AMONG MEDICAID INSURED SCHIZOPHRENIA PATIENTS

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OBJECTIVES: To evaluate treatment patterns, dosage and drug costs of extended-release injectable paliperidone palmitate among schizophrenia patients. **METHODS:** Patients (≥18 years) with at least 1 inpatient or 2 outpatient visits on separate dates with a primary or secondary diagnosis of ICD-9-CM code 295.X before initiating paliperidone palmitate (index event) were identified from the *MarketScan® Research* database (7/1/2008-9/30/2011). Patients were required to have 12 months of continuous insurance coverage before the index event. The follow-up period was variable and patients were followed till insurance disenrollment or end of study period, whichever occurred first. **RESULTS:** Among 1,578 Medicaid insured schizophrenia patients who initiated paliperidone palmitate, mean age was 39 years, 56% were male, 44% were Caucasian, and 49% were African American. Prior to initiating paliperidone palmitate, 49% of patients had previously used other extended-release antipsychotics injectables, of which the most frequently used were risperidone (28%) and haloperidol (17%); 84% patients had used non-extended-release antipsychotics, of which the most frequently used were risperidone (38%), quetiapine (27%), and paliperidone (26%). Mean dosage of the first paliperidone palmitate injection was 193mg with maintenance doses ranging between 157 and 172 mg over the follow-up period. The mean number of days between injections ranged 31-33 days. The mean cost of first paliperidone palmitate injection was $1,329 with maintenance injections ranging between $1,079 and $1,212. Treatment patterns and drug costs were similar for commercially insured schizophrenia patients identified from the same database. **CONCLUSIONS:** This is one of the first studies that evaluates the dosage and costs of a 2nd generation extended-release injectable used in clinical practice. Among patients who initiated paliperidone palmitate, approximately half used at least one other extended-release injectable prior to paliperidone initiation and higher ranges of available doses of paliperidone palmitate were being utilized during maintenance therapy.

PMH35

A COST-EFFECTIVENESS ANALYSIS OF EXTENDING METHADONE AND BUPRENORPHINE-NALOXONE MAINTENANCE TREATMENT OF OPIOID DEPENDENCE FROM EIGHT TO SIXTEEN MONTHS

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OBJECTIVES: To estimate the costs to pharmacy and health care services, cost-benefit and cost-effectiveness of extending methadone maintenance treatment (MMT) and buprenorphine-naloxone maintenance treatment (BNMT) of a Scottish community sample of opioid-dependent individuals from eight to sixteen months. **METHODS:** Structured face-to-face interviews were conducted with 71 opioid-dependent individuals at study intake and then again after six and fourteen months of maintenance treatment with either methadone or buprenorphine-naloxone to obtain data on their utilisation of pharmacy and health care services between interviews. The main outcome measures were the marginal cost-benefit ratio (MCBR) associated with extending MMT and BNMT from eight to sixteen months and the incremental cost-effectiveness ratio (MCER) in terms of cost per additional heroin-free day gained by extending MMT and BNMT from eight to sixteen months. Sensitivity analyses were conducted to estimate the probability that extending each maintenance treatment from eight to sixteen months would be cost-saving and lead to gains in heroin-free days compared to only eight months of maintenance treatment. **RESULTS:** Bootstrapping analysis based on 10,000 data resamples indicated that extending BNMT from eight to sixteen months had a 61% chance of being cost-beneficial to the NHS. By contrast, extending MMT had only a 13% chance of being cost-beneficial. A bootstrapping analysis of 10,000 pairs of costs and effects (heroin-free days gained) indicated that extending BNMT was cost-effective (negative costs and positive effects) for 79% of simulated patients; extending MMT was cost-effective for 21% of simulated patients. Acceptability curves showed that decision-makers could be 95% and 81% confident that investing £40 would achieve an additional heroin-free day in buprenorphine-naloxone patients and methadone patients, respectively. **CONCLUSIONS:** Extending BNMT from eight to sixteen months was estimated to be significantly more likely than extended MMT to be cost-beneficial and cost-effective to the NHS in the long-term outpatient treatment of opioid-dependence.

PMH36

ECONOMIC EVALUATION OF THE USE OF DESVENLAFAXINE IN MAJOR DEPRESSIVE DISORDER IN COLOMBIA

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OBJECTIVES: According to WHO, depression is a disease entity that generates affective disorders and causes severe impact on patient mood, which affects almost 121 million people worldwide. The aim of this analysis is to evaluate the cost-effectiveness of desvenlafaxine in major depressive disorder in the Colombian population from the institutional perspective. **METHODS:** A Markov model simulates the clinical course of a hypothetical cohort of patients >18 years with major depressive disorder. Patients may have up to three depressive episodes along the ten-state model developed through eight-week cycles, using a timeframe of five years and 3% annual discount rate. Comparators were: desvenlafaxine (50 mg/day), fluoxetine (20 mg/day), paroxetine (20 mg/day), duloxetine (60 mg/day) and escitalopram (20 mg/day). Effectiveness measures and adverse events were taken from a literature review, utilities and costs were taken from a local health institution ("Clínica Nuestra Señora de la Paz"), costs are expressed in 2012 USD. Effectiveness measures were depression-free weeks, days lost due to absenteeism, QALYs, and outcome was incremental cost-effectiveness ratio. **RESULTS:** Over a 5-year period, desvenlafaxine obtained 3.5129 QALYs, fluoxetine 3.4950; paroxetine 3.4896; duloxetina 3.4961, and escitalopram 3.4971. Total expected costs were for desvenlafaxine US$3640.30, fluoxetine US$3642.90; paroxetine US$3537.60, duloxetine US$3949.50 and escitalopram US$3275.30. Depression-free weeks were higher with desvenlafaxine (79.91) and lower with paroxetine (76.83); days lost due to absenteeism were lower with desvenlafaxine (69.19) and higher with paroxetine (383.28). **CONCLUSIONS:** For the treatment of major depressive disorder, desvenlafaxine is a cost-effective alternative compared to paroxetine (ICER=US$4,409.60/QALY) and escitalopram (ICER=US$23,104.50/QALY); desvenlafaxine is a cost-saving alternative compared to fluoxetina and duloxetina with a higher number of QALYs and lower costs.

PMH37

COST-EFFECTIVENESS OF ATYPICAL ANTIPSYCHOTICS AS TREATMENT FOR PATIENTS WITH BIPOLAR DISORDER (EPISODES OF MANIA): A COMPARISON BETWEEN QUETIAPINE, ARIPIPRAZOLE, OLANZAPINE, RISPERIDONE AND ZIPRASIDONE IN THE RUSSIAN HEALTH CARE

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OBJECTIVES: To estimate the cost-effectiveness of atypical antipsychotics as treatment for patients with manic episodes in the bipolar disorder structure during one year. **METHODS:** A literature-based cost-effectiveness analysis was developed to estimate the costs of bipolar disorder patients initiating therapy with quetiapine, aripiprazole, olanzapine, risperidone or ziprasidone. Direct expenses associated with bipolar disorder and resulting follow-up costs were calculated using general tariff agreement of Russian obligatory insurance system and official national statistics. For reference, accepted exchange rate was 1 EUR = 40 RUB. **RESULTS:** Compared to quetiapine or risperidone, aripiprazole, olanzapine or ziprasidone results in increases in drug therapy costs: 133,464 RUB (3,337 EUR) in quetiapine group, 127,462 RUB (3,187 EUR) in risperidone group, 334,766 RUB (8,369 EUR) in aripiprazole group, 186,457 RUB (4,661 EUR) in olanzapine group and 197,108 RUB (4,928 EUR) in ziprasidone group per patient. The values of cost/remission for one year are estimated at 87,806 RUB (2,195 EUR) in quetiapine group, 72,012 RUB (1 800 EUR) in risperidone group, 187,020 RUB (4,676 EUR) in aripiprazole group, 111 651 RUB (2,791 EUR) in olanzapine group and 153,990 RUB (3,850 EUR) in ziprasidone group per patient. **CONCLUSIONS:**